DOCUMENT RESUME

ED 144 462 HE 009 248

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TITLE Five-Year Projection of Fine Arts Course Enrollment at Amherst College.
INSTITUTION Massachusetts Univ., Amherst. School of Education.
PUB DATE Jan 77
NOTE 37p.
AVAILABLE FROM Program in Postsecondary Education, Educational Policy Studies, School of Education, University of Massachusetts, Amherst, Mass.

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Consortia; *Cooperative Programs; Educational Coordination; Educational Demand; Enrollment Influences; *Enrollment Projections; Enrollment Trends; *Fine Arts; *Higher Education; Institutional Research; *Interinstitutional Cooperation; Private Colleges; Shared Services; Universities
IDENTIFIERS *Five Colleges Incorporated

ABSTRACT

The Five College Cooperative (Amherst, Hampshire, Mount Holyoke, Smith, and University of Massachusetts) allows unrestricted access to any course in any of the colleges to any student enrolled at any of the colleges. The purpose of this research is to furnish information for planning decisions in the Fine Arts Department at Amherst College in the form of a five-year projection of enrollment based on (1) trends in fine arts enrollment among male students at Amherst College, (2) predicted effects of an incremental increase in the number of female students at Amherst College, and (3) trends in the "traffic" patterns of fine arts enrollees in the Five College Cooperative. Projected trends based on each of these variables are treated independently and then synthesized into an overall projection that takes all variables into account. A number of factors that influence enrollment are discussed, including those specific to Amherst College and the Five College Cooperative. National factors that have direct or indirect impact on Amherst College are also considered. (JMF)

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FIVE-YEAR PROJECTION OF FINE ARTS COURSE ENROLLMENT AT AMHERST COLLEGE

An Institutional Research Report

Prepared for

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January 1977

HE009248

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CONTEXT OF THE RESEARCH ENTERPRISE

This institutional research report is the product of a directed learning activity related to "Institutional Research and Program Development in Post-secondary Education," a graduate course offered by the School of Education, University of Massachusetts at Amherst. A major purpose of this course is to acquaint future practitioners with the realities of the context within which the institutional researcher works. Since such purpose is construed to require engagement in a research endeavor not of one's own choosing, but instead one defined by an independent decision maker, the group placed itself at the disposal of Professor Frank Trapp, Chairman of the Fine Arts Department at Amherst College. This report is addressed to him in response to his request for information.

RESEARCH INTENT

The purpose of this research is to furnish information for planning decisions in the Fine Arts Department at Amherst College. At the request of Professor Frank Trapp, chairman of the department, the research group has formulated a five-year projection of fine arts enrollment at Amherst College, based on (1) trends in fine arts enrollment among male students at Amherst College, (2) predicted effects of an incremental increase in the number of female students at Amherst College, and (3) trends in the "traffic" patterns of fine arts enrollees in the Five-College Cooperative.[1]

THE PROBLEM OF ENROLLMENT PROJECTION

There has been a growing interest across the country in predicting student enrollment at institutions of post-secondary education. Varied

[1] Currently, any student enrolled in a member college of the Five-College Cooperative (Amherst, Hampshire, Mount Holyoke, Smith, University of Massachusetts) has unrestricted access to any course in any of the colleges.

techniques have been used to accomplish the difficult task of synthesizing data from various student characteristics.

At small colleges such activity is often more difficult. Amherst College is, however, fortunate in having a large pool of applicants, and it is possible to control with only some slight statistical variation the number of students at the College. Also, withdrawal and return rates at the College do not vary unpredictably.

Most often, relatively simple mathematical procedures are used Usually a "straight-line" or simple linear function is developed. In some cases a graphic inspection will suffice. It is interesting to note that in at least one study, the linear method turns out to have as great an accuracy in projection as several more sophisticated types of calculations, such as least squares and Markov techniques.[2]

The problem faced here is of a somewhat different sort, however, in that we are attempting to project within the total pool of course enrollments represented by Amherst College students and those from the other of the Five Colleges just how many fine arts courses will be taken in the next five years at Amherst College. Such projections take into account historical trends at Amherst, the changing preferences of both men and women, the increasing proportion of women students as against men students, the factors of incoming and outgoing students in the Five-College interchange program, and general national trends.

Specific influences such as size of department, changes in teaching personnel, the difference in student interests, the attractions of studio versus art history courses, scheduling complexities, and a variety of

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[2]M.D. Orwig, Paul K. Jones and Oscar T. Lenning, "Projecting Freshman Enrollment in Specific Academic Departments," Clifford T. Stewart (ed.), Institutional Research and Institutional Policy Formulation, Eleventh Annual Forum of the Association for Institutional Research, 1971.

other factors could of course be influential. The technique used here has been a relatively simple one of developing a general base line projection based on recent history and adjusted it by (a) percentages derived from Five-College incoming student estimates and (b) estimates of the probable differential preferences of women and men.

PROCEDURES

The research group proceeded by dividing into three two-person teams, each team undertaking the study of the influence of one of the three variables. Although the goal was to estimate the composite influence of the three variables, the group judged that it might prove useful to the decision maker to have information about the influence of each variable to the exclusion of the others. To make such information comparable, each team reported variation from the same index $\frac{1}{m}$ a linear projection that took none of the variables into consideration.

The first attempt at linear projection was based on annual fine arts enrollments at Amherst College over the past ten years (Figure 1). The disparity between first and second semester enrollments, however, prompted display of enrollments by semester over the same ten-year period (Figure 2). The baseline projection was calculated from the latter data and is shown in Figure 3.

CALCULATION OF THE INFLUENCE OF SELECTED VARIABLES

Using a linear projection as baseline, separate calculations were made for each of the selected variables (viz., trends in fine arts enrollment among male Amherst College students, predicted effects of an annual incremental increase in the number of female students at Amherst College, patterns of Amherst College fine arts enrollment among students

Figure 1

ANNUAL STUDENT ENROLLMENT
IN FINE ARTS COURSES AT AMHERST COLLEGE
FROM AY 1966-67 TO AY 1975-76

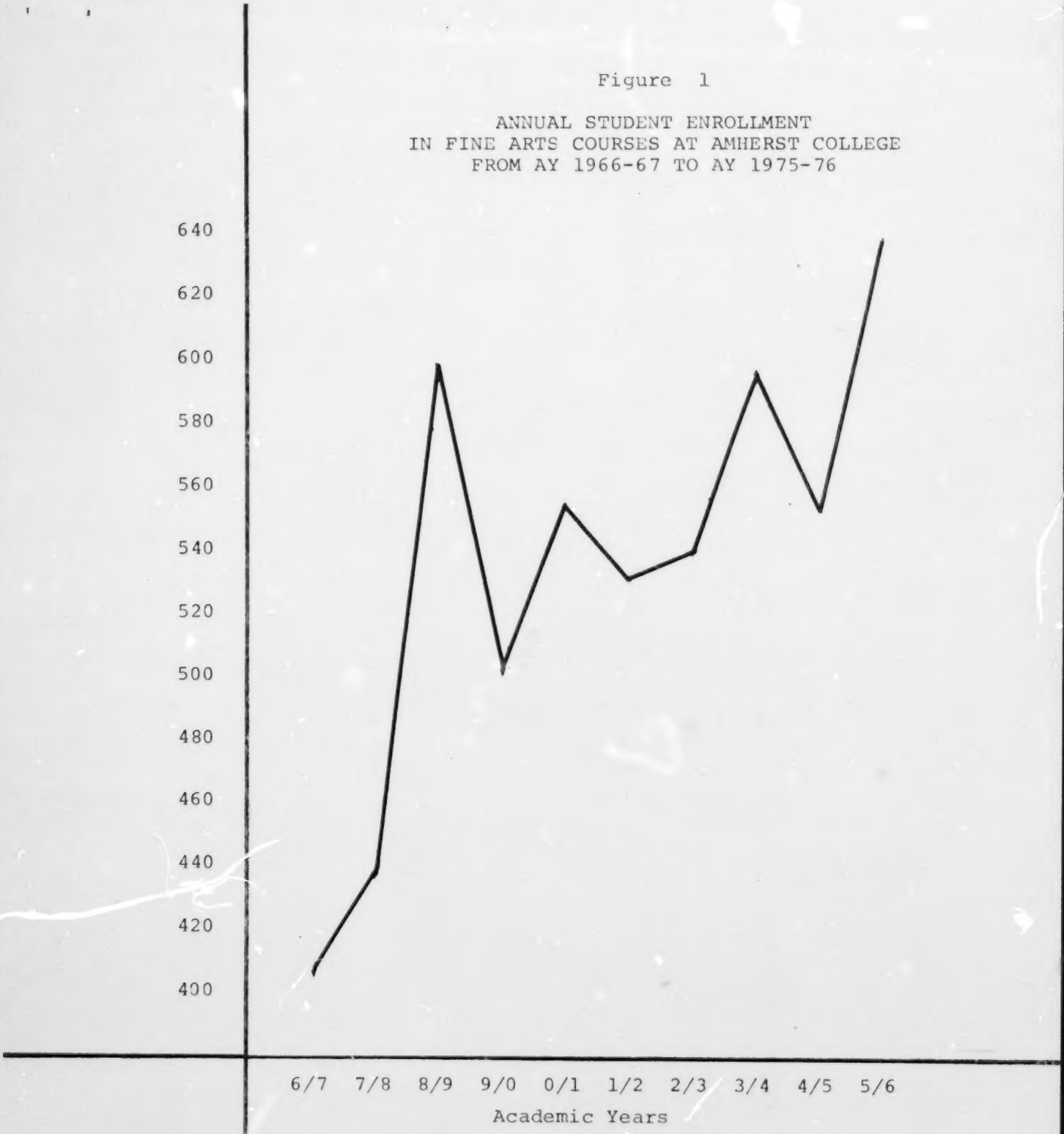


Figure 2

FALL AND SPRING ENROLLMENTS
IN FINE ARTS COURSES AT AMHERST COLLEGE
FROM AY 1966-67 TO 1975-76

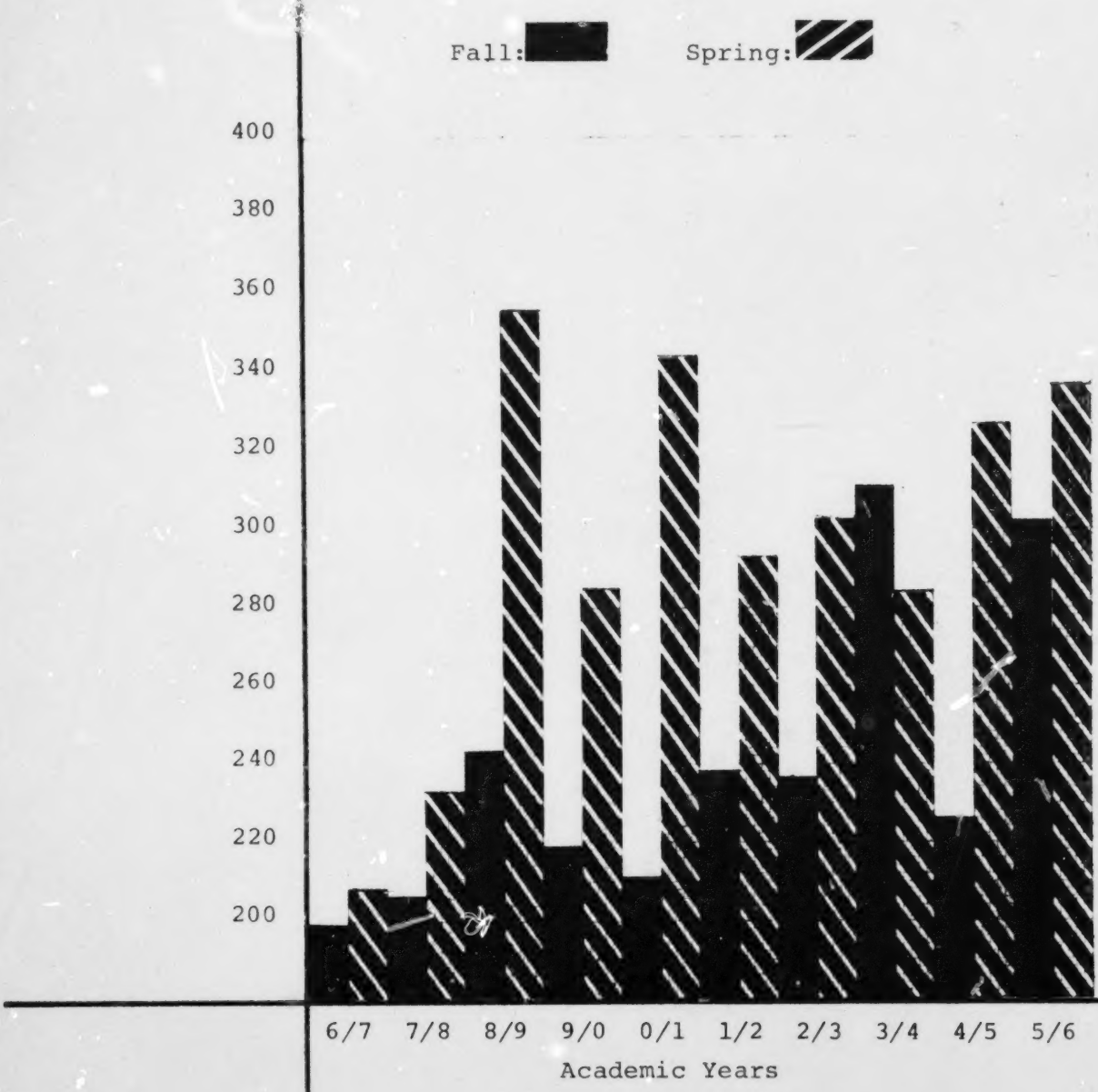
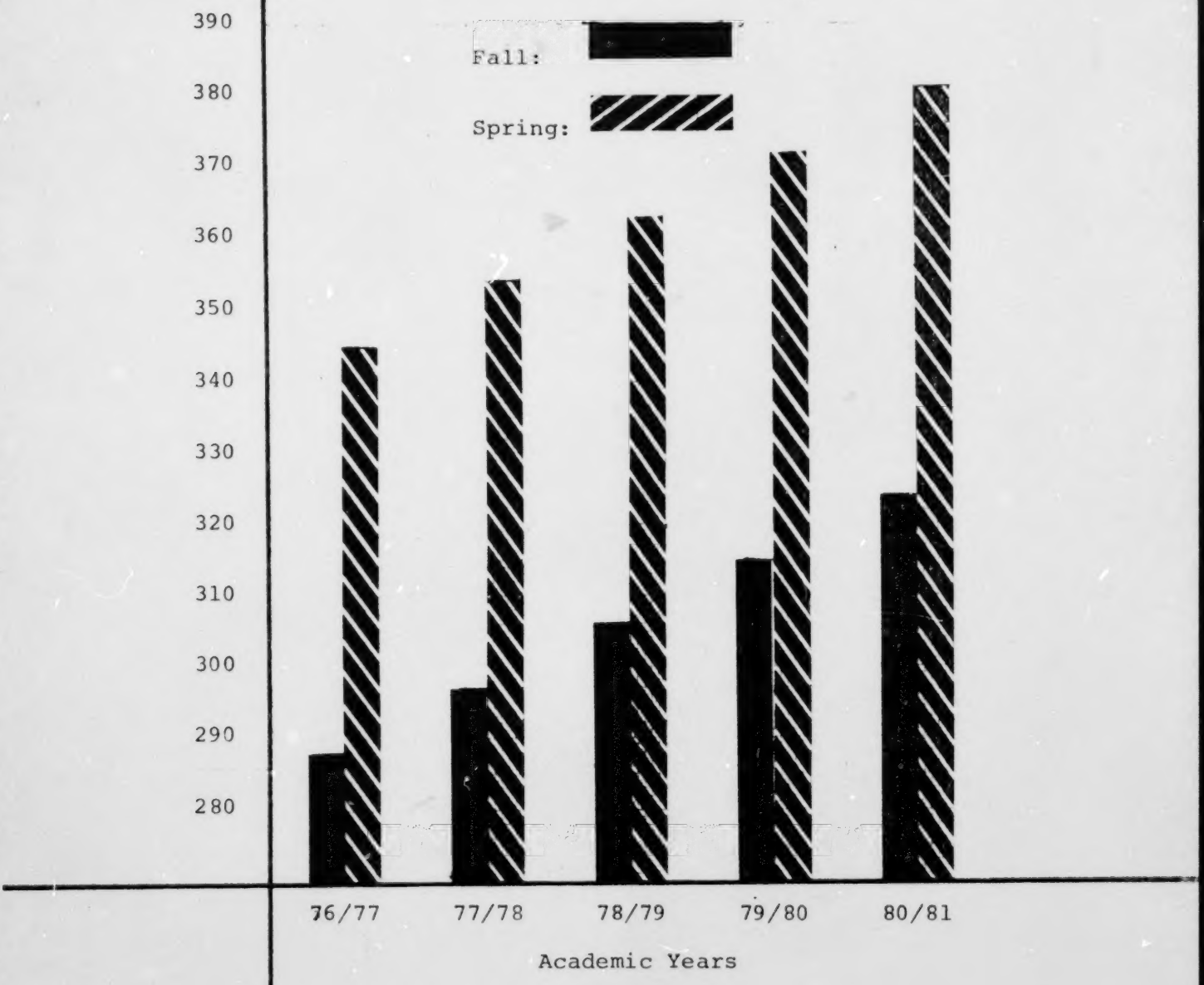


Figure 3

5-YEAR LINEAR PROJECTION OF FALL AND SPRING ENROLLMENTS
IN FINE ARTS COURSES AT AMHERST COLLEGE
BASED ON NO VARIATION IN TRENDS



in the Five-College Cooperative). At this stage each of these variables was treated as the sole variable with potential for affecting the linear projection.

Variable #1

Fine Arts Enrollment
Among Male Students
at Amherst College

The following material is presented to illustrate findings about male enrollment patterns at Amherst College over the past several years. Overall enrollment patterns, as well as their relationships to fine arts enrollments, are described. These data are also included to project enrollment patterns in fine arts independent of other variables, which are addressed in other sections of the report.

The source of the data is the Office of the Registrar and Director of Institutional Research at Amherst College. Extrapolations and projections from these data are, of course, the responsibility of the project group.

Numbers of students (as a percent of all students) majoring in fine arts are currently in a slight decline. This is in keeping with national enrollment trends. However, since fine arts majors are currently only about 3 percent of all Amherst College students and account for only about 5 percent of all fine arts course enrollments, their impact on total enrollment figures is slight.

Fine arts course registrations of Amherst College male students have remained relatively stable over the past five years, although indicating a slight overall decline recently.

Other data indicate that students majoring in fields within Division I take proportionally more fine arts courses than do students within other divisions. These same data indicate that slightly more than half of male students elect a fine arts course at the College at some time during their matriculation. They also suggest that about 38 percent of those who take one fine arts course choose to take at least one more after the first.

While these interesting findings about male student enrollment in fine arts courses at Amherst College do not cast a great deal of light on the variables under examination here, they do suggest the possibility that "interest" factors offset the over-all decline to the point of holding stable the male enrollment in fine arts courses at Amherst College.

Male fine arts enrollment, therefore, is here judged to be constant. No useful purpose is seen in displaying that information graphically. Suffice it to say that male Amherst College student interest in fine arts is here viewed as having no influence on changes in enrollment.

Variable #2

Fine Arts Enrollment
Among Female Students
At Amherst College

This section of the investigation has been devoted to an examination of what effect the annual incremental increase in the number of women at Amherst College will have on the demand for fine arts courses.

The following documents were reviewed in order to gain an understanding of the past and present enrollment patterns of men and women with regard to art as a field of study and career choice:

A. College enrollment figures and art course registration for Fall 1976 at Williams College. Data obtained from: Office of the Registrar, Williams College, entitled: Summary of Registrations 1976-77, dated September 29, 1976.

B. College enrollment figures and art course registration figures for Fall 1975 at Williams College. Data obtained from: Office of the Registrar, Williams College, entitled: Summary of Registrations 1975-76, dated October 31, 1975.

C. College enrollment figures and art course registration figures for Fall 1974 at Williams College. Data obtained from: Office of the Registrar, Williams College, entitled: Summary of Registrations 1974-75, dated October 23, 1974.

D. College enrollment figures and art course enrollments for Fall 1970 (the year prior to women being enrolled at Williams College). Data obtained from: Office of the Registrar, Williams College, entitled: Summary of Registrations 1970-71, dated December 19, 1970.

E. Results of Advanced Placement Test for students at Amherst College taking Art Examination. Data from Summary Information--Department Recommendations on Advanced Placement Tests, Class of 1978, Table 2. Scores Received in Advance Placement Exams by Subject, Class of 1978.

F. Selected figures from entering freshmen responses to the Cooperative Institutional Research Program Inventory, Fall 1975, at selected colleges (Amherst, Williams, Wesleyan, Dartmouth, Bowdoin, and Middlebury).

G. American Council on Education, Office of Research. Summary of Data on Entering Freshmen at Amherst College.

H. College Entrance Examination Board Admissions Testing Program on Prospective Applicants for the Class of 1980 (Self-Assessment).

I. Amherst College Art Department class rosters for Fall 1976. Examined to: 1) determine the number of males and females enrolled in the department and 2) to determine the number of course enrollments in the department. Obtained from: Office of the Registrar, Amherst College.

J. College enrollment figures for Fall 1976 by class. Data obtained from: Office of the Registrar.

Examination of the data revealed that women are more inclined to choose fine arts as a course of study and as a career than are men. For

example, Table 1 shows that at Amherst College the percentage of female enrollments in fine arts courses exceeds the percentage of male enrollments by a ratio of roughtly 2 to 1 (4.4% to 2.6%).

Our examination of art enrollment patterns at Williams College revealed an almost exact replication of the Amherst College enrollment; that is, female enrollments in art courses exceed male enrollments by 2 to 1 (11.3% to 6.6%). Furthermore, this enrollment trend at Williams College has been evident for three years.

Other data found in this investigation support the finding that this 2 to 1 ratio of female to male enrollments in art courses will continue. Information gathered by the College Entrance Examination Board Admissions Testing Program for prospective applicatns to Amherst College (Class of 1980) indicates that women choose art as their intended field of study/probable career in an almost 3 to 1 ratio over men (2.7% to 1.0%). Also, data on six comparable colleges (viz., Amherst, Williams, Wesleyan, Dartmouth, Bowdoin, and Middlebury) show that women choose art as an intended field of study/probable career in a ratio of almost 2 to 1 over men.

Although all of the data on enrollment patterns in art courses indicated this 2 to 1 ratio of women over men in art course selection, there is, however, a caution that needs to be noted. It would appear that the percentage of total course enrollments in fine arts as a percentage of total course enrollments for both men and women is in a state of decline. To support this statement, figures from the American Council on Education Summary Data on Entering Freshmen at Amherst College show that in the space of ten years the percentage of students choosing art as a probable major field of study has dropped from 6.3 percent to

roughly 4.0 percent. In terms of a probable career occupation, again these percentages have dropped from 9.1 percent to 5.6 percent.

Although these figures do not seem overwhelming or involve a large number of students, the trend cannot be ignored. It has been occurring over an extended period of time, and thus cannot be considered an aberration from the norm, but instead must be considered the norm.

Present patterns remaining constant, one could safely predict from the data givern that the fine arts course enrollment demands at Amherst College, at least over the short term, should increase by an average of 10.6% over the next four years because of the planned increase in women's enrollment in the institution. See Table 2.

However, it must once again be pointed out that although the initial impact of the experience in the enrollment of women will create an increased demand for fine arts courses, because of the general decline in the interest in art by both men and women, this demand at Amherst College in all likelihood will diminish.

Variable #3

Fine Arts Enrollments
Of Five-College Students
At Amherst College

In undertaking to explore Five College exchange dimensions of enrollment trends in the fine arts at Amherst College, the investigators were guided by a number of assumptions concerning the dynamics of the exchange process. It was assumed that exchange rates in the fine arts would respond both to general factors affecting the overall exchange, e.g., the bus service, and to factors specific to the discipline, e.g.,

Table 1

PERCENT OF FEMALE ENROLLMENTS IN FINE ARTS
COMPARED TO PERCENT OF MALE ENROLLMENTS IN FINE ARTS
AT AMHERST COLLEGE FOR FALL AY 1976-77

Class	Amherst College Course Enrollments			Amherst College Fine Arts Enrollments*			
	Male	Fem.	Total	Male	%	Fem.	%
1980	1064	636	1700	16	1.5	20	3.1
1979	1230	128	1408	38	3.0	10	7.8
1978	1196	188	1384	27	2.2	15	8.0
1977	1248	128	1376	44	3.5	5	3.9
Unclass.	16	76	92	--	---	1	1.3
Total	4804	1156	5960	125	2.6	51	4.4

*Excluding incoming and outgoing Five-College enrollments.

Table 2

FIVE-YEAR PROJECTION OF AMHERST COLLEGE FINE ARTS ENROLLMENTS
BASED SOLELY ON MALE/FEMALE ENROLLMENT* RATIO**
FOR FALL AY 1976-77

Academic Year	Student Population			Course Enrollments			Fine Arts Enrollments		
	Male	Fem.	Total	Male	Fem.	Total	Male	Fem.	Total
1976-77	1186	285	1471	9488	2280	11768	247	100	347
1977-78	1037	430	1467	8296	3440	11736	216	151	367
1978-79	967	518	1485	7736	4144	11880	201	182	383
1979-80	911	599	1510	7288	4792	12080	189	211	400
1980-81	963	547	1510	7704	4376	12080	200	192	392
1981-82	921	589	1510	7368	4712	12080	192	207	399

* Excluding incoming and outgoing Five-College enrollments.

**(2.6% : 4.4%) See Table 1.

availability of particular courses and/or instructors. Ultimately a paucity of "hard" data has forced reliance on impressions in interpretation of the results of this part of the investigation. It is believed however that these impressions signal the significance of a number of key factors which will bear watching in future attempts to project enrollments.

Consequent on preliminary discussions with the Five-College Coordinator's Office and examination of Amherst's exchange enrollment data, seven principal categories of information were identified for further exploration at the other colleges. These were:

1) Division of courses, enrollments and faculty into sub-disciplines of studio art and art history/appreciation;

2) Turnaway rates (oversubscribed courses);

3) Enrollments attributable to fine arts majors and non-majors;

4) Anticipated changes in curriculum, staffing;

5) Extent to which Five College considerations affect advising, scheduling and curriculum planning;

6) Projected changes in numbers of Five College fine arts students incoming;

7) Capacity and usage level of studio space.

Effects of scheduling, course advertising, fluctuating job opportunities in the fine arts and sheer numbers of course offerings were considered too ephemeral for rigorous investigation. Lack of data concerning the ratio of males to females among exchange participants precluded exploration of the heterosexual dynamic; however, the direction and rate of exchange are suggestive in this regard.

Incoming Five College fine arts enrollments are drawn primarily from Smith College and the University of Massachusetts and, until

recently, have been concentrated in studio art courses. See Table 3. Since Spring, 1975, however, the trend has been toward greater balance between studio and history/appreciation courses. Fall 1976 enrollments in the latter exceeded the former by a ratio of 2:1. See Figure 4.

A similar shift in student enrollments toward the history/appreciation courses is reflected in the Smith College data. Over time, incoming enrollments from Smith and UMass have tended to concentrate heavily in the studio arts, enrollments from Mt. Holyoke have been concentrated in art history/appreciation, and enrollments from Hampshire have been divided fairly equally between the two sub-disciplines. Introductory courses, the photography course, and Visiting Artist Studio and Seminar appear to draw the largest numbers of incoming Five College students.

Lack of adequate studio space to accommodate demand at Hampshire College, Smith College, and the University of Massachusetts, coupled with high turnaway rates in introductory studio courses, may account for enrollment concentrations in the studio area. Similarly, higher concentrations of faculty, courses and enrollments in studio art at UMass and in art history/appreciation at Mt. Holyoke may account for the tendencies of enrollments from these institutions to concentrate in one sub-discipline or the other. The apparent tendency toward balance between the two sub-disciplines may be attributable to some broader trend in student interests (as the trend among Amherst outgoing enrollments and declining turnaway rates at UMass would suggest); however, in the absence of further data this trend can only be conjectured.

The marked decline in incoming fine arts enrollments in Fall 1976 is difficult to interpret and may be simply an aberrant phenomenon. However,

it has been suggested that several specific factors may have contributed to the decline. First, the fact that Amherst College did not advertise its Visiting Artists program as extensively as in years past has been cited to account for the decline in incoming enrollments from Hampshire College. It was reported that Mt. Holyoke has discouraged its majors from concentrating too much of their coursework on other campuses, and a change in the times when Amherst courses popular with Five-College students are offered has been cited as yet another contributing factor. A decline in the number of fine arts majors at UMass may also have contributed, although in the absence of data to indicate the numbers of enrollments accounted for by majors, this factor cannot be weighted too heavily. Finally, the fact that Smith College data reveal a parallel decline in total outgoing enrollments, a decline which is not fully reflected in the Amherst incoming figures, leads us to suspect that the operative factor here may be a factor in the exchange generally rather than one which is specific to the fine arts.

It should first be noted that Amherst imports roughly twice as many fine arts enrollments as it exports. Of those enrollments outgoing, the bulk are concentrated at Smith and Mt. Holyoke Colleges and, as was the case with incoming enrollments, these have tended to be concentrated in the studio arts. Again in a pattern reminiscent of the incoming enrollments data, the trend seems to be toward greater balance between studio and art history/appreciation enrollments. This finding may be flawed by the fact that large percentages of outgoing enrollments concentrate in "independent study" or "special studies" courses which cannot be readily classified according to the studio or art history/appreciation dimension.

Figure 4

STUDENT ENROLLMENTS IN STUDIO, HISTORY/APPRECIATION AND OTHER FINE ARTS COURSES AT AMHERST COLLEGE AY 1971-72 TO AY 1975-76

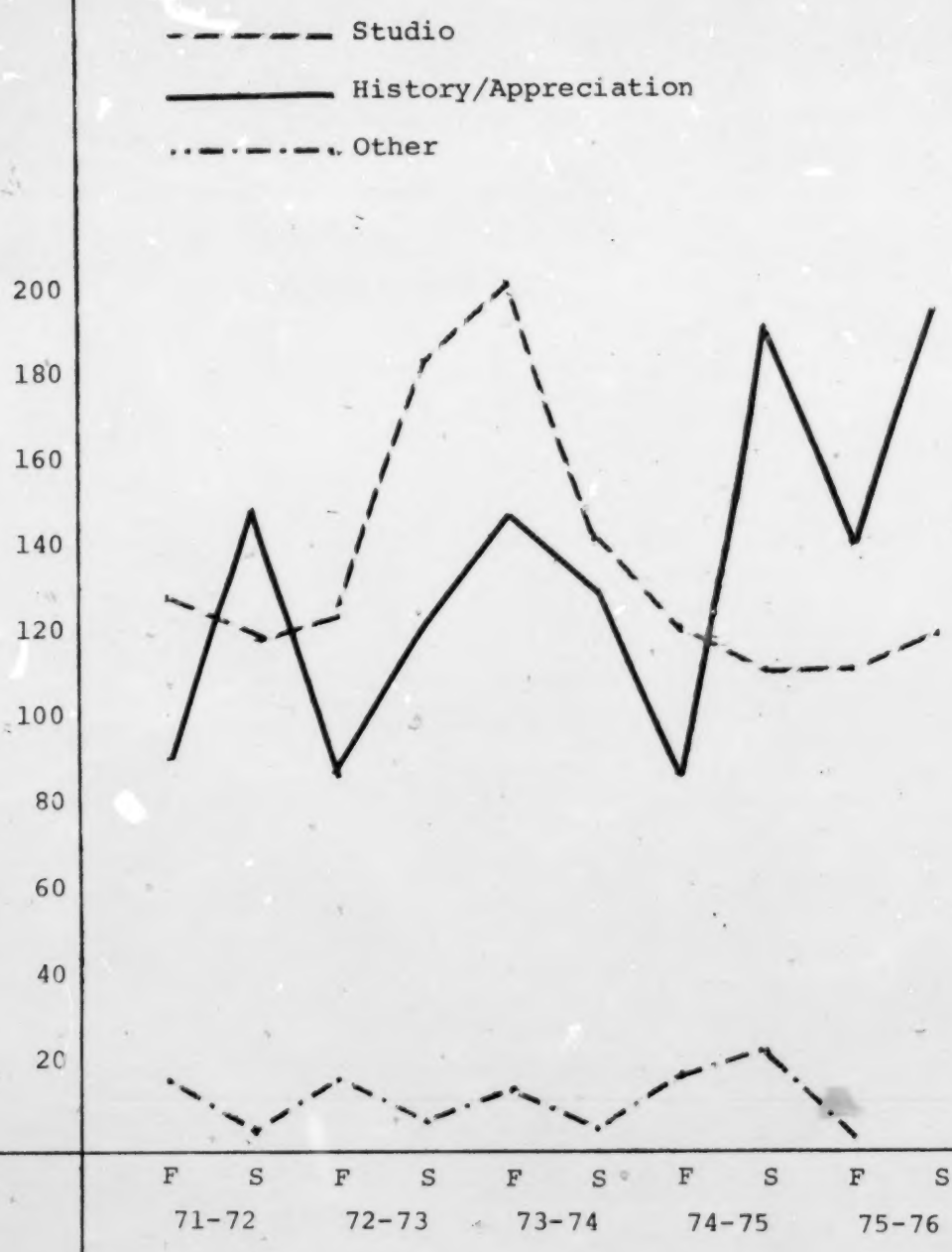


Table 3

INCOMING FIVE-COLLEGE ENROLLMENTS
IN STUDIO ART AND ART HISTORY/APPRECIATION
FROM AY 1971-72 TO FALL AY 1976-77

			UM	MH	HC	SC	TOTAL	PERCENT
71-72	F	Studio	9	9	1	18	37	68.5
		Hist/App	2	1	1	13	17	31.5
		Other*	0	0	0	0	0	
	S	Studio	2	8	5	42	57	56.4
		Hist/App	5	18	8	13	44	43.6
		Other	0	0	0	0	0	
72-73	F	Studio	9	10	3	15	37	68.5
		Hist/App	3	2	5	7	17	31.5
		Other	0	0	0	0	0	
	S	Studio	10	12	6	40	68	68.0
		Hist/App	1	15	1	14	31	31.0
		Other	0	0	0	1	1	1.0
73-74	F	Studio	19	9	13	29	70	71.4
		Hist/App	7	9	6	6	28	28.6
		Other	0	0	0	0	0	
	S	Studio	19	4	6	32	61	56.5
		Hist/App	6	24	3	11	44	40.7
		Other	0	1	0	2	3	2.8
74-75	F	Studio	26	9	6	24	65	69.9
		Hist/App	9	12	4	3	28	30.1
		Other	0	0	0	0	0	
	S	Studio	25	3	4	24	56	43.4
		Hist/App	8	21	15	25	69	53.5
		Other	2	0	0	2	4	3.1
75-76	F	Studio	24	7	7	19	57	57.0
		Hist/App	11	11	12	9	43	43.0
		Other	0	0	0	0	0	
	S	Studio	27	9	12	24	72	52.9
		Hist/App	9	16	13	26	64	47.1
		Other	0	0	0	0	0	
1976	F	Studio	8	2	2	8	20	33.3
		Hist/App	13	3	6	18	40	66.7
		Other	0	0	0	0	0	

*. "Other" includes special studies and independent study.

Courses in sculpture at Mt. Holyoke, architecture at Smith, and color at Hampshire College account for significant numbers of outgoing enrollments. High turnaway rates in ceramics at UMass and photography and architecture at Hampshire and Smith lead one to conjecture that openings in these areas would draw off additional enrollments.

Juniors and seniors account for the bulk of outgoing enrollments, although sophomores also contribute significantly to the total. Freshmen participate in the exchange to a minimal extent.

The concentration of outgoing enrollments at Mt. Holyoke and Smith seems attributable both to positive and negative factors. On the positive side, abundant studio space, the ability to open extra sections for oversubscribed courses, and a popular, well-equipped sculpture program at Mt. Holyoke seem likely to account for high levels of outgoing enrollments. Smith's well-staffed and well-equipped department, particularly in art history, may be its most important drawing card. On the negative side, high turnaway rates in popular courses at UMass and Hampshire College seem most likely to account for depressed enrollments at these institutions. The lack of course offerings in art history at Hampshire and limited studio space at Hampshire and UMass may also account for low enrollments at these schools.

TRENDS IN FIVE COLLEGE ENROLLMENT TRAFFIC

Over the past five years, incoming Five College enrollments to Amherst College have increased fairly steadily every year with a mean percentage increase of 13.4 percent per annum. While much of this increase was realized between academic years 1971-72 and 1972-73, 1975-76 witnessed another substantial increase of 9.5 percent, the bulk

of which is accounted for by a sharp increase in Spring semester enrollments. Fall enrollments, on the other hand, have held steady or declined since Fall, 1973.

In the fine arts, enrollment levels have remained fairly steady during Fall semesters while realizing a slight but steady increase each Spring. A marked forty percent decline in Fall fine arts enrollment from Fall 1975 to Fall 1976 is anomalous since it accounts for sixty-seven percent of the decline in overall incoming enrollment over the same period.

Correlation and regression analysis of the data indicate that numbers of incoming fine arts enrollments are highly correlated (r=.78, alpha=.005) with incoming totals and that Fall incoming totals provide a substantial base on which to predict Spring incoming totals (r=.97, alpha=.005). Correlations between total Amherst enrollment and incoming enrollment and between incoming and outgoing enrollment are not of sufficient magnitude to constitute a reliable base for prediction.

Analysis, therefore, leads us to project a total incoming enrollment of 889 in Spring 1977 of which 110 will be fine arts enrollments. Since these projections are based on standard regression analysis, a caution is in order, given the magnitude of the standard error. Our projection of incoming totals for Spring 1977 is subject to a standard error of 87.7 enrollments and our projection of incoming enrollments in the fine arts is subject to a standard error of 16.2 enrollments. Inspection of the curve's general upward trend leads us to anticipate that the estimate will err on the side of conservatism and that actual incoming fine arts enrollments in Spring 1977 will fall in the range 125 to 130.

Table 4

OUTGOING AMHERST COLLEGE ENROLLMENTS
IN STUDIO ART AND ART HISTORY/APPRECIATION
FROM AY 1971-72 TO FALL AY 1976-77

			UM	MH	HC*	SC	TOTAL	PERCENT
71-72	F	Studio	1	15	5	3	24	77.4
		Hist/App	0	1	1	5	7	22.6
		Other**	0	0	0	0	0	
	S	Studio	2	17	3	7	29	61.7
		Hist/App	3	1	3	10	17	36.2
		Other	0	1	0	0	1	2.1
72-73	F	Studio	4	12	9	12	37	69.8
		Hist/App	0	4	1	7	12	22.6
		Other	0	1	0	3	4	7.5
	S	Studio	2	14	12	17	45	62.5
		Hist/App	4	7	1	7	19	26.4
		Other	0	2	0	6	8	11.1
73-74	F	Studio	0	14	4	16	34	73.9
		Hist/App	2	2	0	5	9	19.6
		Other	0	1	0	2	3	6.5
	S	Studio	3	9	5	7	24	53.3
		Hist/App	1	2	0	10	13	28.9
		Other	0	5	0	3	8	17.8
74-75	F	Studio	6	11	7	4	28	57.1
		Hist/App	5	3	0	10	18	36.7
		Other	0	1	0	2	3	6.1
	S	Studio	1	12	4	6	23	43.4
		Hist/App	1	12	2	12	27	50.9
		Other	0	3	0	0	3	5.7
75-76	F	Studio	0	15	2	4	21	65.6
		Hist/App	1	0	0	8	9	28.1
		Other	0	2	0	0	2	6.2
		Studio	2	8	1	1	12	36.4
		Hist/App	2	5	1	6	14	42.4
		Other	0	3	0	4	7	21.2
1976	F	Studio	2	6	5	1	14	46.7
		Hist/App	0	0	1	12	13	43.3
		Other	0	1	0	2	3	10.0

* Hampshire College data flawed by difficulty of separating studio art from art history/appreciation. HC classifies all art courses as studio.

** "Other" includes special studies and inuependent study.

It is interesting to observe that over the past five years, Amherst's total outgoing students has been smaller in number relative to the total incoming students. Since trends in total outgoing enrollments do not correspond to trends in outgoing fine arts enrollments, projected outgoing totals will not aid in projecting outgoing enrollments in the fine arts. Statistically, there appears to be no significant relation between total outgoing and outgoing in fine arts.

There is a high correlation between Fall and Spring outgoing total enrollments. However, given the lack of an observable relationship between outgoing totals and outgoing enrollments in fine arts, this finding is of marginal utility for projecting outgoing fine arts enrollments. Similarly, the lack of a significant correlation between incoming and outgoing enrollments in the fine arts precludes our use of incoming enrollments data for projection of outgoing enrollments.

For the total outgoing in fine arts in the past five years, there was a calculated mean of 41.7, and for the total incoming in fine arts in the past five years, there was a calculated mean of 93.9. From this information one can conclude that for every Amherst student leaving the campus twice as many Five-College exchange students will enroll in fine arts courses at Amherst. As the percentage of Amherst enrollment in fine arts increases, the percentage of fine arts outgoing will decrease. However, the correlation that we have attempted to derive concerning outgoing enrollments is not large enough to provide the base for prediction. Another base for prediction must be used in order to project trends in outgoing enrollments.

THE PROJECTION

Having projected trends in fine arts enrollments solely on the basis of the anticipated influence of each of the variables under consideration, our task now is to synthesize these into an overall projection which takes all variables into account. The task is complicated by the fact that some of our data are not directly comparable; nevertheless, with the aid of a few assumptions, an overall projection can be construed. Another complication stems from the fact that the error of prediction from the several variables is generally unknown. We have not been able to estimate this with any validity, nor have we been able to study the adequacy of projection methods.

There are, however, several aspects of the degree of discrepancy that might be found if the estimates are too high and fewer students actually enroll. This results in more than sufficient physical space and a lowered teaching load by faculty. But if the projections are indeed underestimates and a larger number of students sign up for fine arts courses, there will be an overtaxing of space, high student/faculty ratios, turnaways from limited courses, and pressure for students to go elsewhere in the Valley. In other words, the consequences of error are rather different depending on the direction of that error.

Looking first to the variable of Amherst's overall growth and its influence on fine arts enrollments, we note that over the past five years fine arts enrollments have constituted an average of 4.2 percent of total enrollments when the influence of Five-College incoming traffic is excluded. Assuming that this percentage will remain constant over the next five years, and that total enrollments at the college will approximate eight times the number of students enrolled, we derive

students over the next five years, less the number of those enrollments which will be drawn off to the other four colleges, plus the number of incoming fine arts enrollments which can be expected from the four colleges.

For the estimate of the base projection, a constant percent of total enrollment in fine arts is assumed, drawing on the somewhat variable proportions of total enrollments evidenced by the data in Table 5. On the other hand, a constant absolute number of students is used for the projection of outgoing fine arts enrollments. A constant absolute number of outgoing enrollments is used here for reasons that: 1) there is no significant relationship between outgoing enrollment totals and outgoing enrollments in fine arts; 2) there is no significant relationship between total "at home" enrollments and outgoing enrollments in the fine arts; and, 3) there is as yet no clear trend in the pattern of outgoing enrollments in the fine arts. (See Table 6). This variability may be in part a reflection of changes in the number of spaces available to Amherst students both "at home" and at other colleges. Finally, an increase in yearly percentage is used to reflect the probable continuing increase, especially in the spring semester, of incoming Five-College students. (This may not climb at the same rate for all five years, but we do not have counter evidence as yet.)

There is some evidence of an increasing proportion of enrollments in fine arts history as against enrollments in studio art, both in incoming students and those going off campus for courses in fine arts. It is not quite clear what factors might be affecting this (note Tables 3 and 4). If all colleges are limiting studio courses in terms of space and availability of staff in the face of generally rising interest in art, something

a baseline estimate of the numbers of fine arts enrollments which may be expected over the next five years, all other factors remaining constant.

Moving next to consider the anticipated increase in the number of female students at Amherst and the concomitant decline in the number of males, we note that females at similar institutions elsewhere have tended to enroll in fine arts courses at a rate twice that of males. Assuming that our 4.2 percent figure above represents the percentage of male enrollments which would be accounted for by male students and that twice that, or 8.4 percent, represents the percentage of female enrollments which would be accounted for by female students, we derive estimates of the number of fine arts enrollments which will be generated by both sexes.

Finally, viewing the trends in Five-College incoming and outgoing traffic, we assume that male and female Amherst students will participate in the exchange to an equal extent. (The lack of a correlation between numbers of Amherst College "at home" enrollments and numbers of Amherst students outgoing on exchange precludes our consideration of what influence an increased number of women will have on outgoing enrollments.) Noting the absence of a clear trend in outgoing fine arts enrollments, we are forced to rely on the mean number of outgoing fine arts enrollments over the past five years in making our prediction. To do so, we subtract 83 enrollments per year from the number of fine arts enrollments we would expect "at home." Incoming fine arts enrollments have realized a mean percentage increase of 11.7 percent per annum over the past five years. Our projection assumes continuation of this trend.

Our overall projection, therefore, consists of an estimate of the number of fine arts enrollments which will be generated by Amherst

Table 5

PERCENT OF TOTAL AMHERST COLLEGE ENROLLMENT
REPRESENTED BY AMHERST COLLEGE "AT HOME" ENROLLMENT
IN FINE ARTS OVER THE PAST FIVE YEARS

Academic Year	Total "At Home Enrollment	Fine Arts Enrollment*	Percent of Total
1971-72	8532	376	4.4
1972-73	8903	385	4.3
1973-74	9193	384	4.1
1974-75	9064	327	3.6
1975-76	9236	403	4.4
			$\bar{x}$ = 4.2**

* Amherst College students in fine arts courses at Amherst College.

** Mean percent used as constant percent in the projection.

of this sort may be portrayed in these tables. On the other hand, there may be a real decline in interest in studio art but at the same time a corresponding growth in interest in art history courses. Certain college departments may indeed have changed their emphases toward art history.

In Figure 4 can be seen the overall semester by semester enrollments at Amherst College accumulating the Amherst College "home" course enrollments and the incoming ones but omitting outgoing enrollments to the Five Colleges. There was a peak in 1972-73 for studio work although the art history enrollments continue to rise.

For AY 1981-82 the enrollments will have increased considerably even with the yearly mean number of total students at the college remaining at 1510. By then the balance of women and men is predicted to be 921 men to 589 women, or 39 percent women. It would appear unlikely that the incoming five-college fine arts enrollments would continue to climb in the same fashion, but it is our best estimate at this time. If so, the proportion of five college students taught in the department would be over 40 percent. This seems unlikely. Alternative projections might well show in the next few years only a small total rise in fine arts enrollment.

The particular rates and figures may be somewhat incorrect, but it would appear from these calculations that the incoming five-college traffic will have the most significant impact on fine arts enrollments. Monitoring figures in the next few years will be most useful in assessing how each of the following trends is behaving: a) general interest in fine arts among Amherst College students, b) differential preferences by women and men, c) incoming interest from others in the Valley, and, d) interest of Amherst College students in taking fine arts courses off campus.

If there were a major curriculum change or if there were a major shift in student interest among Amherst College students, large fluctuations could indeed occur - and in either direction!

Table 6

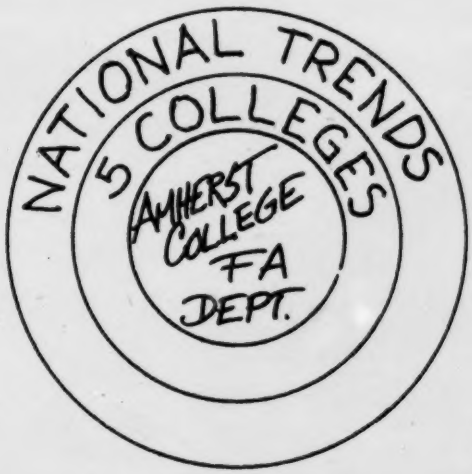
FIVE-YEAR PROJECTION OF FINE ARTS ENROLLMENTS AT AMHERST COLLEGE
BASED ON PREDICTED INFLUENCE OF SELECTED VARIABLES

Academic Year	Amherst College Population			Amherst College Course Enrollments					5-College Fine Arts Enrollments		Projected Total Fine Arts Enrollments At Amherst College
				All Courses		Fine Arts Courses					
	Total	Male	Fem.	Male	Fem.	Male	Fem.	Total	Out	In	
1976-77	1471	1186	285	9488	2280	398	191	589	83	263	769
1977-78	1467	1037	430	8296	3440	348	289	637	83	294	848
1978-79	1545	967	578	7736	4624	325	388	713	83	329	959
1979-80	1510	911	599	7288	4792	306	402	708	83	367	992
1980-81	1510	963	547	7704	4376	323	367	690	83	410	1017
1981-82	1510	921	589	7368	4712	304	396	705	83	458	1080

FACTORS WITH POSSIBLE
BUT UNESTIMATED INFLUENCE
ON ENROLLMENTS

Throughout our investigation we discovered factors that could possibly influence enrollments in fine arts courses. Although we were not able to estimate the impact of these factors because of the nature and design of this project, a brief discussion of these factors appears relevant in terms of future research endeavor.

We begin first with a look at the factors specific to Amherst College. The focus then shifts to the greater Five College Cooperative, and lastly we take a moment to observe what factors nationally could have either a direct or indirect impact on Amherst College.



Amherst College

The factors specific to Amherst College seem to be:

1) Scheduled time of courses:

Q: Does the time of day a course is offered make a difference in the numbers of students who select the course? (8:00 a.m. course versus mid-morning or mid-afternoon; 2-3 hour course offered at a time of other desired courses.)

2) Physical Plant

Q: Is Amherst College's physical facility adequate to handle the number of students interested in studying studio courses?

Q: Would additional space draw more interest from students?

3) Staffing Practices

Q: Is the current staff sufficient to handle the different content areas within the department?

Q: Do students feel their specific interests are met by the existing staff?

Q: Are student interests translated into subsequent course offerings by faculty?

4) Core Requirements & The Role of the Major

Q: If Amherst College were to restore the core curriculum, how would the Fine Arts Department be affected?

Q: What impact would a significant increase in the number of fine arts majors have on that department?

5) Turnaways

Q: How does the department handle student interest in a particular course (i.e., photography, pottery) with limited enrollment space?

Q: What happens to the student (and his/her intrinsic motivation) when a particular course is closed:

Discussion: An understanding of the significance of turnaway data in departmental planning is perhaps the most important tangential finding of this enterprise. Once a course has been filled and registration are closed, unless an accurate tally is kept of those who sought but were denied admission to the course, we no longer have a useful measure of

the demand for that course. Yet such measures are of vital importance, particularly in studio-type courses, where accommodation of additional students requires facilities having a high per unit cost.

Ideally, intra-College enrollment planning should be predicated, in part, on comprehensive turnaway data from all of the fine arts departments in the Valley.

6) Five College Cooperation

Q: What changes will occur if enrollment patterns suddenly change with regard to the "traffic" into Amherst College from the Five-College Cooperative program?

Comments: Although incoming Five-College enrollments for Amherst College as a whole are slightly lighter in the spring than in the fall, the pattern for fine arts enrollments for five of the past six years has been higher in the spring than in the fall, both in absolute numbers and in the percent of total Amherst College enrollment. Moreover, the spring enrollments continue to climb, although fall enrollments seem to be stabilizing or possibly declining. Such imbalance is problematic in that it leads to a circumstance in which the resources of the Fine Arts Department are taxed in one semester and underutilized in the other.

Several possibilities exist for adjusting to the differential enrollments by semester. Quotas for incoming Five-College students certainly a possibility. More "attractive" courses may be scheduled in the fall. Part-time faculty may be hired for the spring semester alone. Pre-requisites may be added to screen out students. Spring courses may be put in in the mornings to cut down both Five-College and Amherst

College enrollments. Of course, extra sections and extra staff may be added to provide for increasing student interest.

The Five-College Cooperative Program

Factors having an effect on the Amherst College fine arts department that relate to the Five College Cooperative Program are:

1) Scheduled time of courses at any of the participating institutions:

Q: Are Amherst College students better able to schedule a course off campus because of a more convenient or desirable time at another institution?

2) Physical Plant

Q: Are other institutions better equipped in some or all areas in fine arts?

3) Staffing Practices

Q: Can a student be attracted to an individual artist on another campus whose interests may be more in line with his own than those of the artists at Amherst College?

Q: Do other institutions recruit famous guest lecturers or artists and therefore attract Amherst students to study with them?

4) Turnaways

Q: Do the other institutions limit class size any differently than Amherst College.

Q: Can an Amherst student turned away from a desired course "at home" be served by another campus?

Q: How do the participating colleges deal with students they must turn away due to closed courses?

5) Changes in thrust at any of the other participating Five-College fine arts departments

6) Degree of cooperation between the Five-College Institutions:

Q: Are lines of communication open among the five departments?

Q: How much long/short term planning goes on cooperatively among institutions?

National Trends

In general, a national trend (either inclining or declining) with regard to interest in art will effect Amherst College as will the more local variables. Interest in art as a major field of study and/or career will be determined in part by the "job market."

Q: How does society absorb or utilize individuals with a preparation in art?

Q: Is innate creative ability encouraged and developed in both our public and private schools?

Q: Are appropriate role models visible to students during their developmental stages?

Some of the forementioned variables throughout this discussion seem easy to ascertain in an informal manner; others will require more formal investigation. It would, however, seem to us that many of the questions asked here would need to be answered if the Amherst College Fine Arts Department truly wants a view of years to come and their role within the institution.